

CKD INFLAMMATION AND AGING

FO005

SERUM AMYLOID A (SAA) AND HIGH DENSITY LIPOPROTEINS (HDL) INTERACTION AND CARDIOVASCULAR RISK IN RENAL PATIENTS

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Introduction and Aims: High-density lipoproteins (HDL) are considered as vasoprotective and antiatherogenic. Recent experimental findings suggest that their

biological properties can be modified in certain clinical conditions such as renal impairment by accumulation of serum amyloid A (SAA). The effect of SAA on the association between HDL cholesterol (HDL-C) and cardiovascular outcome remains unknown.

Methods: We examined the associations of SAA and HDL-C with all-cause and cardiovascular mortality in the Ludwigshafen Risk and Cardiovascular Health (LURIC) Study including 3,310 patients undergoing coronary angiography. To validate our findings specifically in renal patients, we analyzed 1,255 participants of the German Diabetes and Dialysis Study (4D).

Results: In the LURIC study, SAA concentrations predicted all-cause and cardiovascular mortality and were increased particularly in patients with renal impairment, along with other cardiovascular risk factors. In persons with low SAA, higher concentrations of HDL-C were associated with lower all-cause and cardiovascular mortality. Contrarily, in patients with high SAA, higher HDL-C was associated with increased all-cause and cardiovascular mortality indicating that SAA indeed modifies the beneficial properties of HDL. We corroborated these clinical observations in in-vitro experiments, where SAA had deleterious effects on vascular functions of HDL. We further derived a formula for the simple calculation of the amount of biologically “effective” HDL-C based on measured HDL-C and SAA from the LURIC study. Accordingly, in the 4D study, we found that measured HDL-C was not associated with clinical outcomes, whereas calculated “effective” HDL-C significantly predicted better outcome.

Conclusions: The acute phase protein SAA modifies the biological effects of HDL-C in renal patients as well as in other clinical conditions where inflammation is present. The concomitant measurement of serum SAA is a simple, useful, and clinically applicable method to determine the vascular functionality of HDL.